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09/524,575	03/13/2000	Takuya Hiramatsu	SEI-142-133	7265

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KUBOVCIK & KUBOVCIK
SUITE 710
900 17TH STREET NW
WASHINGTON, DC 20006

EXAMINER	
TRAN, HIEN THI	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/524,575	HIRAMATSU ET AL.	
	Examiner	Art Unit	
	Hien Tran	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7,8,11-22,26,29 and 30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-8, 11-22, 26, 29-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 13-14, 16, 18, 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 13-14, 16, 18, 20, the dependency of these claims needs to be amended since these claims cannot depend on the cancelled claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 7-8, 11-22, 26, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 94/11623 in view of EP 661,098, EP 602,963 and JP 7-124468.

With respect to claim 7, WO 94/11623 discloses a system for exhaust gas purification comprising:

at least one adsorbent capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a H/Beta-zeolite having a SiO_2/Al_2O_3 ratio of 100 or more (page 4, lines 22-37); and

at least one catalyst containing a catalyst component, capable of reducing said harmful substances (page 6, lines 13-24);

both said at least one adsorbent and said at least one catalyst being provided at an in-line exhaust pipe of an internal combustion engine (page 20, lines 8-10; page 26, lines 9-14).

The apparatus of WO 94/11623 is substantially the same as that instantly claimed, but fails to disclose whether the adsorbent may contain at least one catalyst component of noble metal.

However, JP 7-124468, EP 661,098, EP 602,963 show the conventionality of providing an adsorbent containing Beta zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon (col. 11, lines 41-47 in EP 661,098; page 5, lines 2-7 in EP 602,963, abstract of JP 7-124468).

It would have been obvious to one having ordinary skill in the art to add a catalyst component as taught by JP 7-124468, EP 661,098, and EP 602,963 in the apparatus of WO 94/11623 for control coking occurred in parallel with the adsorption of harmful substances, i.e.

hydrocarbon, thereby to facilitate the regeneration of the adsorbent without lowering the adsorption ability of the zeolite.

With respect to claims 11-14, WO 94/11623 discloses that the catalyst contains at least one noble metal as catalyst component, selected from Pt, Pd and Rh (page 11, lines 26-31, page 19, lines 28-34).

With respect to claims 8, 30, EP 602,963 discloses that Pd is preferably used as the noble metal carried into the zeolite (page 5, lines 6-7, 24-25). EP 661,098 also disclosed that Pd is preferably used because it allows for low temperature ignition (col. 11, lines 1-2).

With respect to claims 15-18, JP 7-124468, EP 661,098, and EP 602,963 disclose that the noble metal is loaded on heat-resistant oxide (col. 12, lines 43-47 in EP 661,098; page 5, lines 25-27 in EP 602,963; abstract of JP 7-124468).

With respect to claims 19-22, 26, the modified apparatus of WO 94/11623 is substantially the same as that instantly claimed, but fails to disclose whether the adsorbent may have a hollow central portion.

However, EP 661,098 discloses provision of an adsorbent in honeycomb shape, said adsorbent having a hollow central portion.

It would have been obvious to one having ordinary skill in the art to provide an adsorbent with hollow central portion as taught by EP 661,098 in the modified apparatus of WO 94/11623 so as to retard the timing of the start of HC desorption as taught by EP 661,098.

With respect to claim 29, WO 94/11623 discloses that the adsorbent contains an H/Beta-zeolite having a SiO_2/Al_2O_3 ratio of 200 or more (page 4, lines 22-37, page 5, line 1).

6. Claims 7-8, 11-22, 26, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 661,098 in view of WO 94/11623.

With respect to claim 7, EP 661,098 discloses a system for exhaust gas purification comprising:

at least one adsorbent capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a Beta-zeolite; and

at least one catalyst containing a catalyst component, capable of reducing said harmful substances;

both of said at least one adsorbent and said at least one catalyst being provided at an in-line position of exhaust pipe of an internal combustion engine.

The apparatus of EP 661,098 is substantially the same as that instantly claimed, but is silent as to the specific type of the Beta-zeolite as claimed.

However, WO 94/11623 discloses the conventionality of providing H/Beta-zeolite as an adsorbent, said H/Beta-zeolite having a SiO_2/Al_2O_3 ratio of 100 or more (page 4, lines 22-37).

It would have been obvious to one having ordinary skill in the art to substitute the H/Beta-zeolite of WO 94/11623 for the Beta-zeolite of EP 661,098 for the known and expected result of obtaining the same results in adsorbing pollutant from exhaust gas, since WO 94/11623 teaches that unexpectedly, beta-zeolite has been shown to be particularly effective adsorbents, especially those having high silica/alumina ratio.

EP 661,098 also show the conventionality of providing an adsorbent containing Beta zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon (col. 11, lines 41-47 in EP 661,098).

With respect to claims 8, 30, EP 661,098 also disclosed that Pd is preferably used because it allows for low temperature ignition (col. 11, lines 1-2).

With respect to claim 11-14, EP 661,098 discloses that the at least one catalyst contains at least one noble metal as catalyst component, selected from Pt, Pd and Rh (col. 10, lines 29-35 in EP 661,098).

With respect to claims 15-18, EP 661,098 discloses that the noble metal is loaded on heat-resistant oxide (col. 12, lines 43-47 in EP 661,098).

With respect to claims 19-22, 26, EP 661,098 discloses provision of an adsorbent in honeycomb shape, said adsorbent having a hollow central portion.

With respect to claim 29, WO 94/11623 discloses that the adsorbent contains an H/Beta-zeolite having a SiO_2/Al_2O_3 ratio of 200 or more (page 4, lines 22-37, page 5, line 1).

7. Claims 7-18, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 602,963 in view of WO 94/11623.

With respect to claim 7, EP 602,963 discloses a system for exhaust gas purification comprising:

at least one adsorbent capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a Beta-zeolite; and

at least one catalyst containing a catalyst component, capable of reducing said harmful substances;

both said at least one adsorbent and said at least one catalyst being provided at an in-line position of exhaust pipe of an internal combustion engine.

The apparatus of EP 602,963 is substantially the same as that instantly claimed, but is silent as to the specific type of the Beta-zeolite as claimed.

However, WO 94/11623 discloses the conventionality of using the H/Beta-zeolite as an adsorbent having a SiO_2/Al_2O_3 ratio of 100 or more (page 4, lines 22-37).

It would have been obvious to one having ordinary skill in the art to substitute the H/Beta-zeolite of WO 94/11623 for the Beta-zeolite of either EP 602,963 for the known and expected result of obtaining the same results in adsorbing pollutant from exhaust gas, since WO 94/11623 teaches that unexpectedly, beta-zeolite has been shown to be particularly effective adsorbents, especially those having high silica/alumina ratio.

EP 602,963 also shows the conventionality of providing an adsorbent containing Beta zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon (page 5, lines 2-7 in EP 602,963).

With respect to claims 8, 30, EP 602,963 discloses that Pd is preferably used as the noble metal carried into the zeolite (page 5, lines 6-7, 24-25).

With respect to claim 29, WO 94/11623 discloses that the adsorbent contains an H/Beta-zeolite having a SiO_2/Al_2O_3 ratio of 200 or more (page 4, lines 22-37, page 5, line 1).

With respect to claims 11-14, EP 602,963 discloses that the at least one catalyst contains at least one noble metal as catalyst component, selected from Pt, Pd and Rh (page 5, lines 18-29 in EP 602,963).

With respect to claims 15-18, EP 602,963 discloses that the noble metal is loaded on heat-resistant oxide (page 5, lines 25-27 in EP 602,963).

8. Claims 19-22, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 602,963 in view of WO 94/11623 as applied to claims 7-18 above and further in view of EP 661,098.

With respect to claims 19-22, the modified apparatus of EP 602,963 is substantially the same as that instantly claimed, but fails to disclose whether the adsorbent may have a hollow central portion.

However, EP 661,098 discloses provision of an adsorbent in honeycomb shape, said adsorbent having a hollow central portion.

It would have been obvious to one having ordinary skill in the art to provide an adsorbent with hollow central portion as taught by EP 661,098 in the modified apparatus of EP 602,963 so as to retard the timing of the start of HC desorption as taught by EP 661,098.

Response to Arguments

9. Applicant's arguments filed 4/21/03 have been fully considered but they are not persuasive.

Applicants argue that the first and second catalyst zone and the adsorbent zone of exhaust system of WO 94/11623 are not provided in an in-line type of exhaust pipe. Such contention is not persuasive as although WO 94/11623 discloses the preferred embodiment including the cross monolith for the catalyst zones, WO 94/11623 also discloses other embodiment in which the catalyst zones comprise discrete carrier monoliths and therefore the system of WO 94/11623 is not a looped system.

Applicants argue that no teaching or suggestion in EP 661,098 and/or WO 94/11623 to use the H/beta-zeolite of WO 94/11623 having the SiO_2/Al_2O_3 ratio of 100 or more as the

adsorbent-catalyst disclosed in EP '098. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, EP '098 discloses the conventionality of using beta-zeolite as the adsorbent. WO 94/11623 also discloses that unexpectedly, beta-zeolite has been shown to be particularly effective adsorbents, especially those having high silica/alumina ratio, such as the range of 500 or 1000, etc., wherein the ion-exchanged beta-zeolite, such as H/Beta-zeolite, is preferred (page 12, line 32 to page 13, line 10).

It would have been obvious to one having ordinary skill in the art to substitute the H/Beta-zeolite of WO 94/11623 for the Beta-zeolite of either EP 602,963 for the known and expected result of obtaining the same results in adsorbing pollutant from exhaust gas, since WO 94/11623 teaches that unexpectedly, beta-zeolite has been shown to be particularly effective adsorbents, especially those having high silica/alumina ratio and since such a modification would have involved a mere substitution of known equivalents. A substitution of known equivalents is generally recognized as being within the level of ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Applicants argue that the only zeolite that EP '098 uses in the examples is ZSM-5 and nothing is described in EP '098 concerning the expected results of using H/Beta-zeolite. Such

contention is not persuasive as it has been held that a disclosure in a reference is not limited to its specific illustrative examples, but must be considered as a whole to ascertain what would be realistically suggested thereby to one ordinary skill in the art. *In re Uhlig*, 54 CCPA 1300 376 F2d 320; 153 USPQ 460. Furthermore, EP '098 discloses other types of zeolites being used as the adsorbent including ZSM-5, beta-zeolite, etc. while the WO 94/11623 reference discloses that unexpectedly, beta-zeolite has been shown to be particularly effective adsorbents, especially those having high silica/alumina ratio.

Applicants argue that the EP '963 discloses an oxidizing gas feed means upstream of the absorbent-catalyst. Such contention is not persuasive as there is no evidence that the presence of oxidizing gas feed means would materially affect the basis and novel characteristics of the instant invention.

With respect to the declaration filed 4/21/03, it should be noted that the experiment therein only uses different silica/alumina ratios, different amounts of the adsorbent between the invention and prior art and therefore it is difficult to understand which is the main effect in the results thereof. Furthermore, the language of the claims does not commensurate in scope with the condition of the experiment in the declaration. Furthermore, the superior result of use of H/Beta zeolite with high silica/alumina ratio is expected as WO 94/11623 discloses that unexpectedly, beta-zeolite has been shown to be particularly effective adsorbents, especially those having high silica/alumina ratio, such as the range of 500 or 1000, etc., wherein the ion-exchanged beta-zeolite, such as H/Beta-zeolite, is preferred (page 12, line 32 to page 13, line 10).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hien Tran

Hien Tran
Primary Examiner
Art Unit 1764

HT
October 13, 2004